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| EXAMINER |
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MOORE, KARLA A

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| ART UNIT | PAPER NUMBER |
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1763

DATE MAILED: 11/21/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/724,002

Applicant(s)

YAMAZAKI ET AL.

Examiner

Karla Moore

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 and 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 8-9 and 11-12 and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite "said transferring chamber", because there are two transfer chambers claimed, it is unclear whether Applicant is referring to both transfer chambers or just one. Clarification is requested.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,319,321 to Hiraga et al. in view of U.S. Patent No. 4,405,487 to Harrah et al.
5. Hiraga et al. disclose a film deposition apparatus substantially as claimed in Figures 1-4, comprising: a stock chamber (1) for loading or unloading a substrate; a transferring chamber (200) including a mechanism (13) for transferring the substrate; a liquid phase film deposition chamber connected to said transferring chamber through a gate (11); and a calcining chamber (4). The apparatus may be used for depositing an electroluminescent material.
6. Although, the liquid phase film deposition chamber of Hiraga et al. is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Hiraga et al. do teach that the liquid deposition must take place in a sealed vessel free of floating particles

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and/or contaminated gases, where the contaminant gases include oxygen molecules and water vapor (column 13, rows 51-52).

7. Harrah et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

8. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Hiraga et al. in order to scavenge moisture within chamber as taught by Harrah et al.

9. Claims 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al. and Harrah et al. as applied to claims 1 and 13 above, and further in view of U.S. Patent No. 5,310,410 to Begin et al.

10. Hiraga et al. and Harrah et al. disclose the invention substantially as claimed and as described above.

11. However, the prior art fails to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

12. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

13. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in the prior art as taught by Begin et al.

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14. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al. and Harrah et al. as applied to claims 1 and 13 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

15. The prior art disclose the invention substantially as claimed and as described above.

16. However, the prior art fails to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

17. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

18. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber with a turning mechanism in the prior art in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

19. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al. in view of Harrah et al. in view of U.S. Patent No. 6,149,392 to Conte.

20. Hiraga et al. and Harrah et al. disclose the invention substantially as claimed and as described above.

21. However, the prior art fails to teach said oxidizing mechanism provided via a piping.

22. Conte discloses multiple chamber and getter (oxidizing mechanism) configurations in Figures 5-7, including a configuration where the getter is connected to the chamber via piping. Conte further discloses that ideally particles of getter material are prevented from moving through the chamber (column 5, rows 51-65).

23. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a getter connected to a chamber via piping in the prior art in order to prevent particles of getter material from moving through the chamber as taught by Conte.

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24. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al. and Conte as applied to claim 4 above, and further in view of U.S. Patent No. 5,310,410 to Begin et al.

25. Hiraga et al. and Harrah et al. and Conte disclose the invention substantially as claimed and as described above.

26. However, the prior art fails to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

27. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in the prior art as taught by Begin et al.

29. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al. and Conte as applied to claim 4 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

30. The prior art discloses the invention substantially as claimed and as described above.

31. However, the prior art fails to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

32. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in the prior art in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

34. Claims 7-8 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al. in view of Harrah et al. and in view of Begin et al.

35. With respect to claims 7 and 16, Hiraga et al. and Harrah et al. disclose a stock chamber, a transferring chamber, a liquid phase film deposition chamber provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table and a calcining chamber—as described above.

36. However, Hiraga and Harrah et al. fail to disclose an additional transfer chamber connected through said stock chamber through a gate or a vapor phase film deposition chamber connected to one of said two transferring chambers through a gate.

37. Begin et al. disclose a multi-chamber apparatus comprising two transfer chambers (14) connected to a stock chamber (26, Figure 4) through a gate (32, Figure 1; 90) and a plurality of vapor deposition chambers/first chambers (38, 40, 42, 80, 82) in an arrangement for the purpose of providing greater flexibility in the types of operations performed (column 2, rows 28-43). Although, both of the transfer chambers are not directly connected to the stock chamber through a single gate, they are connected through a gate.

38. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an additional transfer chamber and a vapor deposition chamber to the prior art in order to achieve an arrangement providing greater flexibility in the types of operations performed as taught by Begin et al.

39. With respect to claims 8 and 17, Hiraga et al. and Harrah et al. disclose a stock chamber, a transferring chamber and a liquid phase film deposition chamber provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table—as described above.

40. However, Hiraga et al. and Harrah et al. fail to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

41. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular

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process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

42. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in the prior art as taught by Begin et al.

43. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al, Harrah et al. and Begin et al. as applied to claims 7-8 and 16-17 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

44. The prior art discloses the invention substantially as claimed and as described above.

45. However, the prior art fails to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

46. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

47. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in the prior art in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

48. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al. in view of Harrah et al. in view of Begin et al. in view of U.S. Patent No. 6,149,392 to Conte.

49. With respect to claim 10, Hiraga et al. and Harrah et al. disclose a stock chamber, a transferring chamber, a liquid phase film deposition chamber provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table and a calcining chamber—as described above.



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50. However, Hiraga and Harrah et al. fail to disclose an additional transfer chamber connected through said stock chamber through a gate or a vapor phase film deposition chamber connected to one of said two transferring chambers through a gate.

51. Begin et al. disclose a multi-chamber apparatus comprising two transfer chambers (14) connected to a stock chamber (26, Figure 4) through a gate (32, Figure 1; 90) and a plurality of vapor deposition chambers/first chambers (38, 40, 42, 80, 82) in an arrangement for the purpose of providing greater flexibility in the types of operations performed (column 2, rows 28-43). Although, both of the transfer chambers are not directly connected to the stock chamber through a single gate, they are connected through a gate.

52. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an additional transfer chamber and a vapor deposition chamber to the prior art in order to achieve an arrangement providing greater flexibility in the types of operations performed as taught by Begin et al.

53. Hiraga et al., Harrah et al., and Begin et al. disclose the invention substantially as claimed.

54. However, the prior art fails to teach said oxidizing mechanism provided via a piping.

55. Conte discloses multiple chamber and getter (oxidizing mechanism) configurations in Figures 5-7, including a configuration where the getter is connected to the chamber via piping. Conte further discloses that ideally particles of getter material are prevented from moving through the chamber (column 5, rows 51-65).

56. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a getter connected to a chamber via piping in the prior art in order to prevent particles of getter material from moving through the chamber as taught by Conte.

57. With respect to claim 11, Hiraga et al., Harrah et al. and Begin et al. disclose the invention substantially as claimed and as described above.

58. However, the prior art fails to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

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59. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

60. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in the prior art as taught by Begin et al.

61. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Begin et al. and Conte. as applied to claims 10 and 11 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

62. The prior art disclose the invention substantially as claimed and as described above.

63. However, the prior art fails to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

64. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

65. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in the prior art in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

### ***Conclusion***

66. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km  
November 18, 2002

  
**GREGORY MILLS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**